

# **Fermilab Garden Club**

## **Troybilt Rototiller Operations Manual**

**Version 1.00**

**May 9, 2006**

**Required Reading Before Using Club-Owned  
Troybilt Rototillers.**

**This document contains selected pages from, “Troy-Bilt Roto Tiller-Power Composter Owner’s Manual.” It contains those pages that pertain to the safety and operation of the machines. (Not all pages from the original manual are included here.) After reading, contact a Club Officer for a field demonstration. After the demonstration, gardeners will receive a card, which identifies them as having been trained for using the Troybilt rototillers. Contact a club officer for questions or assistance.**

## SECTION 2:

# RULES FOR SAFE OPERATION

Safety

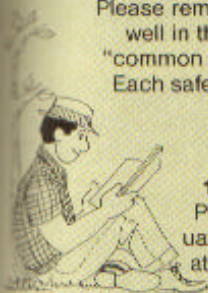
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For your safety, and the safety of others, please carefully follow all of the safety precautions that follow. Failure to do so could result in personal injury or damage to equipment or property.

Please remember that all power equipment has to be powerful enough to do its job well in the garden. Such power, however, can hurt you if you forget or disregard "common sense" safety rules in normal operation.

Each safety rule is simply a matter of common sense, based upon knowledge of, and familiarity with the operating controls of the machine and its engine.

### BASIC SAFETY RULES



#### 1. KNOW YOUR MACHINE.

Please read this Owner's Manual carefully. Learn how to operate your machine properly, and how to stop quickly.

**2. PRACTICE** with the machine in a large, open area—with the tines out of the ground—before putting it to work.

**3. NEVER ALLOW CHILDREN** or young teenagers to use or play with the tiller.

**4. KEEP ALL PERSONS** (especially small children), and pets, away from the area of operation.

**5. INEXPERIENCED ADULTS** should be fully trained in machine operation, including Safety Rules, before they are allowed to operate the machine.

**6. DON'T WEAR LOOSE CLOTHING OR JEWELRY** (such as ties, scarves, unbuttoned sleeves, necklaces, etc.). They could get caught in moving parts of the machine or its engine.

**7. KEEP HANDS, FEET AND CLOTHING SAFELY AWAY** from moving parts such as tines, belts, gears, pulleys, wheels and shafts.

**8. DO NOT TILL NEAR UNDERGROUND** electric cables, telephone lines, pipes or hoses.



**9. STOP ENGINE** whenever you leave the machine unattended. Place the Forward/Neutral/Reverse Lever in Neutral, stop the engine, disengage the tines, and then disconnect the spark plug wire from the plug to prevent accidental starting.

**10. DO NOT** operate machine when barefoot, or when wearing sandals, sneakers or similar light-weight footwear. Always wear good, sturdy shoes or boots.

**11. ALWAYS KEEP GUARDS, COVERS AND HOODS** in place. Never remove unless the engine is off, the spark plug wire is disconnected, and then **ONLY** if you have to make a repair or adjustment. Failure to do so could cause injury from moving parts such as belts, pulleys, shafts and tines.

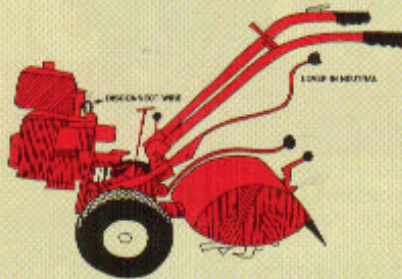
**12. READ THE MANUALS** provided with any optional accessories or attachments before operating. The manuals provide a detailed description of proper use and operation, and point out other important Rules For Safe Operation.

**13. THOROUGHLY INSPECT THE AREA** where the machine is to be used and remove all bottles, wire, sticks, bones and other foreign objects that could cause personal injury or damage to equipment or property.



## SAFETY RULES for Operating and Adjusting the Tiller

**1. STOP ENGINE** and wait for all moving parts to stop before cleaning, adjusting or repairing machine. The Forward/Neutral/Reverse Lever should be in Neutral and the tines Disengaged. Also, disconnect the spark plug wire from the spark plug to prevent accidental starting.



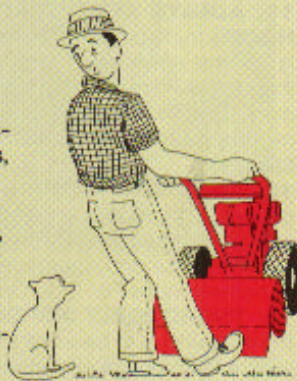
**2. PLEASE REMEMBER:** You can always STOP the wheels, tines, or other P.T.O. (Power Take Off) driven attachments from moving by placing the Forward/Neutral/Reverse Lever in Neutral.

**3. ALWAYS** keep the flap on the tiller hood cover down when your tiller is in operation, except when furrowing and hilling.

**4. DO NOT** engage powered tines in the ground when the Wheel Speed Shift Lever is in FREE WHEEL Position. In Free Wheel, the wheels will not help to hold the tiller back, and the revolving tines could propel the tiller rapidly away from you—possibly causing loss of control.

### **5. USE REVERSE WITH CAUTION.**

Make sure the area immediately behind you is clear of obstructions (such as fences, posts, trees, etc.) before operating the tiller in Reverse. Also, don't use Reverse in Fast Wheel Speed unless you are sure you can maintain control of the tiller at these faster speeds. For Safety, always place Tines/P.T.O. Clutch Lever in Disengaged position before going in Reverse.



**6. ALWAYS BE AWARE** that the tiller may unexpectedly bounce upward or jump forward if the tines should strike extremely hard-packed soil, tough sod, unworked soil, frozen soil, or buried objects such as large stones, roots or stumps. When faced with extremely tough conditions such as these, or if you are in doubt about the tilling conditions, always use the following operating precautions to assist you in maintaining control of the tiller:

- Walk behind and to one side of the tiller, using *just one hand*. A *secure grip but loose arm* will give you better control should the tiller bounce or jump.
- Use *shallower* depth regulator settings, working down *gradually* deeper with each pass until the soil has been thoroughly loosened.
- Use slower wheel, tine and engine speeds.
- Clear the area to be tilled of large stones, roots, etc., as much as possible.
- Avoid applying downward pressure on the handlebars. If necessary, apply *slight upward* pressure to prevent the tines from digging too deeply.
- Remember to keep feet and legs away from the revolving tines.
- Before contacting hard-packed soil at the end of a row, always slow down the engine speed and raise the tines out of the soil.
- Do not "fight" the tiller if it should bounce or jump; *lightly resist* the movement and let the tiller settle back down.
- In an emergency, the wheels and tines can be stopped quickly by shifting the Forward/Neutral/Reverse Lever into Neutral.

**7. EXCESSIVELY STEEP SLOPES SHOULD BE AVOIDED.** Don't try to till on a hill that is too steep for safety. When operating on sloping ground, slow down and make sure you have good footing. Also, never shift the Wheel Speed Shift Lever when heading up or down a slope. If you accidentally engaged the lever in Free Wheel, the machine could roll out of control. If you must shift on a hill, first reduce the engine speed to a slow setting, and then turn carefully across the face of the slope before shifting gears.

**8. KEEP ALL** parts and controls in good working condition. Follow maintenance instructions in Section 6.



**9. NEVER** try to clean the tines by hand when the tines are in motion. First stop the engine, then Disengage the tines with the Tines/PTO Lever. If you're extremely careful, you can try running the tiller in Reverse for a short distance while the tines are in the Engaged Position (see Safety Caution No. 5 before doing so). Often, the tines will clear themselves when you go forward again.

**10. WHEN SNOWPLOWING**, either remove the tines completely, or Disengage the tines with the Tines/PTO Clutch Lever. Revolving tines could be dangerous on slippery sidewalks or driveways.

**11. WHEN LOADING OR UNLOADING** tiller, always Disengage tines and use slower wheel and engine speeds. Use sturdy ramps that are wide and strong enough to support both tiller and operator (tiller weighs between 260 and 300 lbs.). Never go down ramps in Forward gear as the tiller could tip forward, exposing you to the tines (which should be disengaged). Always use Reverse, and back down ramps.

**12. ALWAYS KEEP HANDS, FEET AND CLOTHING SAFELY AWAY** from moving parts such as tines, belts, gears, pulleys, wheels and shafts.

## SAFETY RULES for Operating the Engine

**1. BEFORE STARTING ENGINE**, always place the Forward/Neutral/Reverse Lever in Neutral.

**2. NEVER RUN ENGINE INDOORS.** Exhaust gases contain carbon monoxide, a deadly poison that is odorless and colorless. Always make sure there is adequate ventilation when engine is running.

**3. GASOLINE AND ITS VAPORS** are highly flammable and explosive. Use and store gasoline with extreme caution.

**A.** keep matches, cigarettes, open flames, or sparks away from the vicinity of the gasoline tank or storage area.

**B.** Never fill gasoline tank when engine is running or while engine is still hot. Spilling fuel on hot engine parts could cause a fire or explosion.

**C.** Fill fuel tank outdoors, never in an enclosed area. Use a funnel or spout to prevent spilling. Wipe off any spilled gasoline and move machine away from gasoline fumes before starting engine.

**D.** Do not overfill fuel tank. Fill to within ½-inch of top to prevent spillage and to allow for fuel expansion. Install the proper caps on fuel tank and gasoline container before starting engine.

**E.** Store gasoline in a cool, well-ventilated area, safely away from any spark or flame producing equipment. Store only in an approved container and safely out of the reach of children.



**F.** Do not store machine with gasoline in the tank inside a building where fumes may reach an open flame or spark. Always allow engine to cool before storing tiller inside.

**G.** Hot or corroded and rusted-out mufflers can cause gasoline explosions or brush fires by allowing hot carbon particles to escape. Allow muffler to cool down completely before filling fuel tank. Replace a deteriorated muffler immediately.

**H.** When adding gasoline to electric start engines, avoid contacting any portion of the battery or its cables with your gasoline container. If a spark should occur, it could cause an explosion.



**4. TO PREVENT ACCIDENTAL STARTING**, disconnect the spark plug wire and keep the wire away from the spark plug and fuel tank.

**5. DON'T TOUCH A HOT MUFFLER.** The muffler and surrounding parts get extremely hot. Avoid contact until it has cooled down.

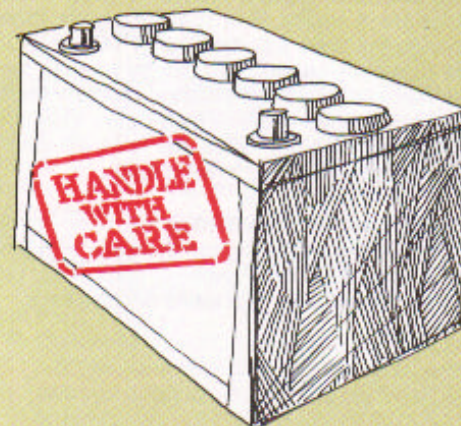
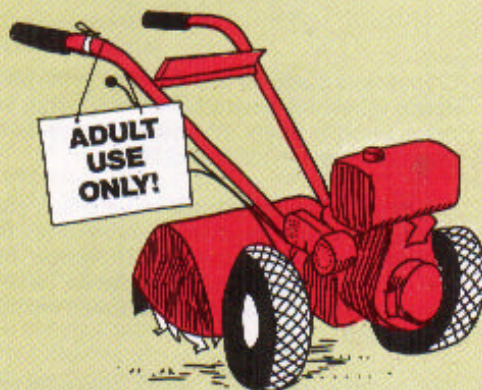
**6. MAKE SURE** engine bolts, fuel lines and connections are tight and in good condition.

**7. DO NOT TAMPER** with the engine governor setting to increase engine speed. Overspeeding is extremely hazardous.

**8. DON'T** put hands, tools, or any object near or inside the flywheel or its covering (blower housing) while the engine is running.

**9. BATTERY WARNING: POISON/DANGER—**Causes Severe Burns. Your battery contains sulfuric acid—avoid contact with skin, eyes or clothing. Antidote: EXTERNAL—Flush immediately with lots of water. INTERNAL—Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg or vegetable oil. Call physician immediately. EYES—Flush with water for 15 minutes and get prompt medical attention.

Batteries produce explosive gases. Keep sparks, flame, cigarettes away. Ventilate when charging or using in enclosed space. Always shield eyes when working near batteries. KEEP OUT OF REACH OF CHILDREN.



**10. WHEN WORKING ON OR NEAR BATTERY TERMINALS**, follow instructions closely and don't touch the positive battery post and any other surrounding metal with tools, jewelry, or any other metal object, because a short circuit could occur. Your machine has two insulated rubber boots that fit over the positive post on the battery and over the positive cable connection on the solenoid. To help prevent the possibility of a spark or a short circuit from occurring, always keep these boots in their proper place.

**11. KEEP ENGINE FREE** from excessive accumulations of grass, leaves, or grease or oil. An accumulation of these materials could result in a fire.

**12. KEEP THE THROTTLE CABLE** on electric start tillers away from the battery and its cables. DO NOT RUN the cable across the top of the battery, it could short out and damage the battery, as well as melt the throttle cable.



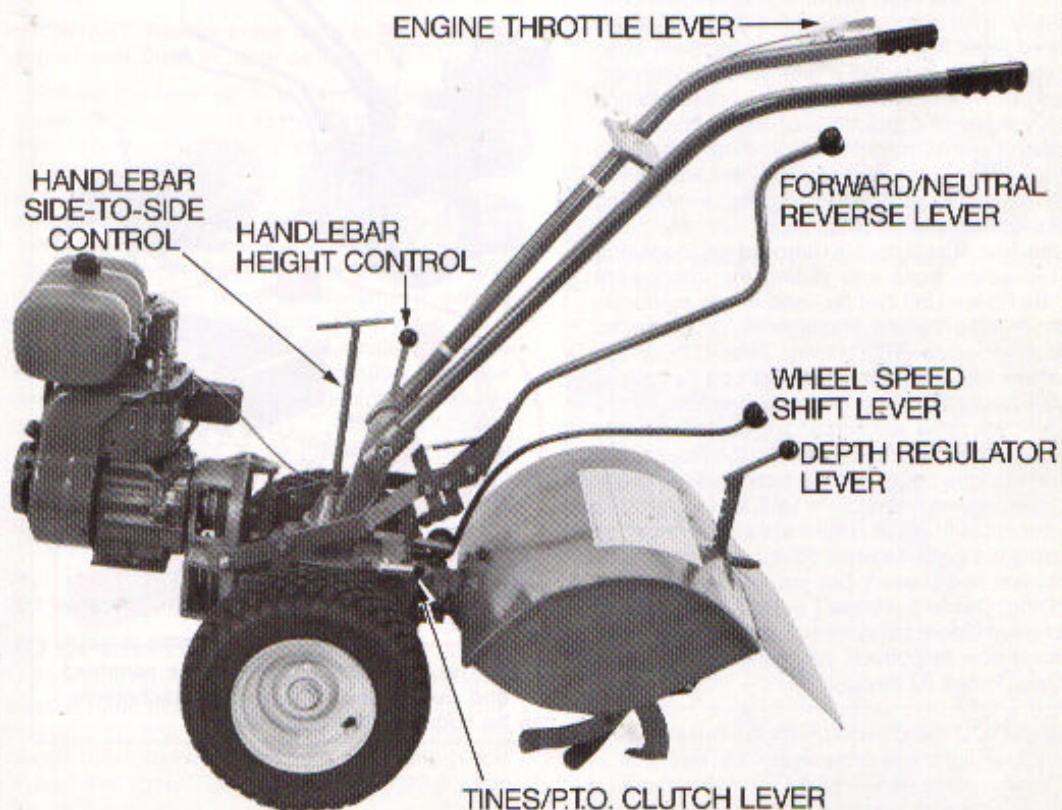
## SECTION 3: TILLER CONTROLS

If you have never used a Horse Model Tiller before then you are in for a pleasant surprise. A combination of simple controls (see Photo 3/1), perfect machine balance, and power-driven wheels help to make your machine extremely easy to operate and handle.

In the following pages, you'll learn all about the controls that affect tiller operation. Practice

using these controls—WITH THE ENGINE OFF—until you become completely familiar with their location and function.

Most importantly, please take your time! These minutes spent now in familiarizing yourself with the proper operation of the tiller controls will greatly add to your understanding and full enjoyment of your new machine.





## Forward/Neutral/Reverse Lever

This lever, located in the center of the operator's position, delivers engine power to the transmission. The wheels and tines (or any other powered attachment), will not be powered unless this lever is used.

Pushing the lever down engages power from the engine to the transmission by raising the engine and its mount upward, thus tightening the drive belt between the engine pulley and the transmission pulley. The transmission then rotates the wheels and the tines in the Forward direction. If the tines are removed and a stationary attachment is installed (such as a log splitter or a generator), the Forward position of the lever delivers power to the attachment. NOTE: Whether or not the wheels, tines, or other powered attachment will start moving also depends upon the positions of their separate controls, which are described further on in this Section.

Raising the lever from the Forward position puts the machine in Neutral, which stops all motion to the wheels, tines or other powered attachment.

**IMPORTANT: Always place lever in NEUTRAL to stop wheels, tines or other powered attachment.**

Shifting the lever up from the Neutral position causes the engine and its mount to move downward, creating slack in the forward drive belt. At the same time, the rubber reverse disc on the back of the engine pulley rubs against the transmission pulley below it, thus turning the transmission in the Reverse direction. As long as the lever is held up in the Reverse position, the wheels and tines, or any other powered attachment, will be powered in the Reverse direction.

Releasing the lever will automatically return the machine to Neutral, stopping all motion. The lever cannot be locked in Reverse, which is a safety feature for your protection.

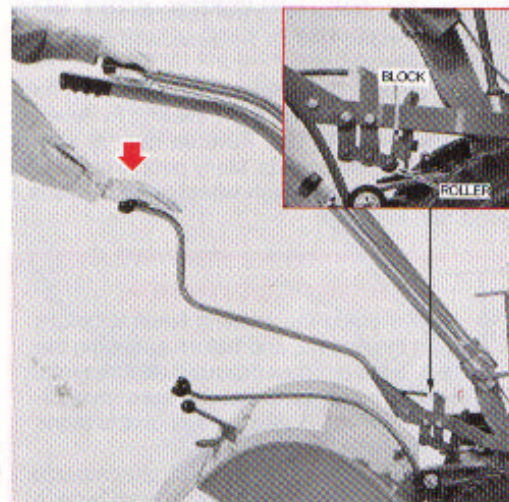
For safety, always place the lever in Neutral before starting the engine and before engaging the wheels, tines, or other powered attachments. Also, before shifting between Forward and Reverse, always return to Neutral and wait for all motion to stop. This neutral pause will avoid possible damage to the drive belt, reverse disc, or transmission.

### TO OPERATE THE LEVER:

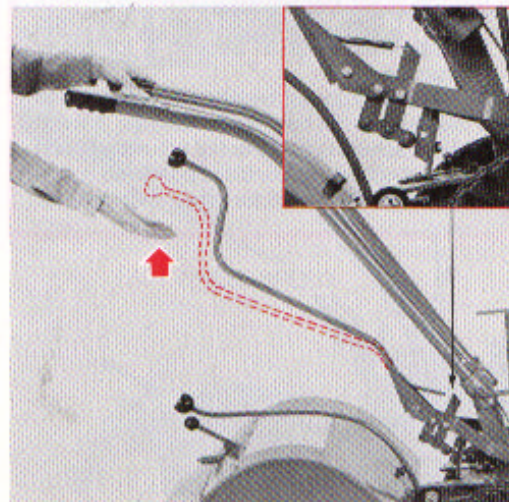
With the engine off, practice operating the lever as described next. As you do, note in the accompanying photos the various positions that the clutch roller takes on the belt adjustment block. Your roller should be similarly positioned when you shift your lever.

**For Forward Wheel and Tine Motion (or to Apply Power to a Stationary Attachment):** Push the lever all the way DOWN and LET GO—see Photo 3/3. The lever will stay in Forward until you return it to Neutral. To return to Neutral, tap or lift the lever UP and LET GO—see Photo 3/4.

NOTE: In Neutral, the clutch roller will rest anywhere on the face of the adjustment block, depending upon drive belt length and future adjustments for belt tension.



3/3—Push Forward/Neutral/Reverse Lever DOWN for Forward.



3/4—Tap or lift lever UP to stop Forward motion.



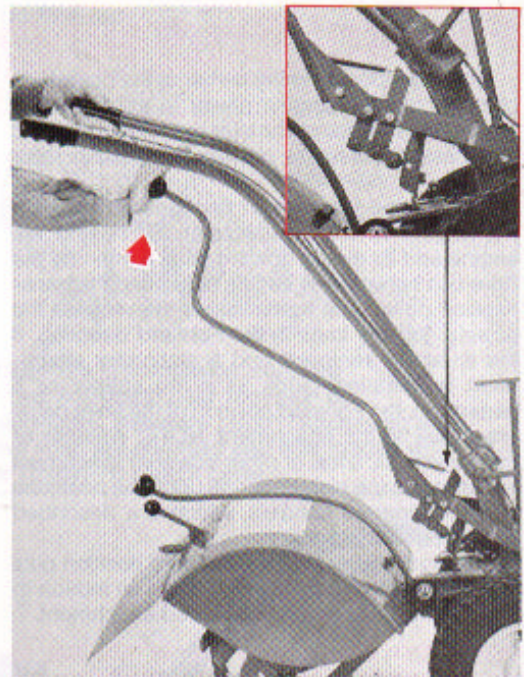
**For Reverse Motion:** Lift and hold the lever all the way UP—see Photo 3/5. The lever must be held in Reverse position for Reverse motion. To return to Neutral, simply LET GO of the lever—see Photo 3/6. (Note that the clutch roller doesn't move very far from Neutral to Reverse.)

Please remember that the primary function of Reverse is to provide you with extra maneuverability when you are in tight quarters, and for cleaning the bolo tines if they should get tangled with organic matter. You should never till in Reverse (always disengage the tines with the Tines/PTO Lever before reversing, and raise them out of the ground by lifting up on the handlebars). Also, to avoid premature wear to the reverse disc, try to avoid prolonged use of Reverse with any powered attachment.

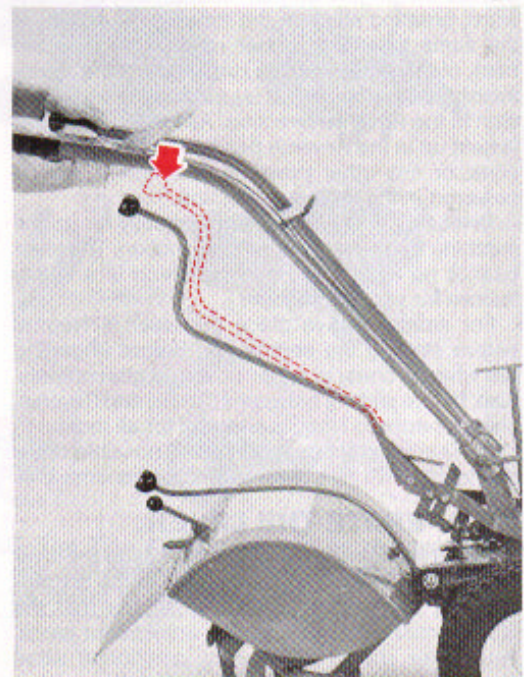
Until you are completely comfortable with handling the machine while it is travelling in Reverse, it's a good idea to use Reverse only at slower wheel and engine speeds. Many people never shift into Reverse while in high wheel speed. This is a good rule to follow.

#### SAFETY CAUTIONS

- Always place the lever in Neutral before starting the engine, and before engaging the wheels, tines or other powered attachments.
- Always make sure that the area immediately behind you is clear of any obstructions before moving in Reverse.
- Before using the lever with attachments other than the tines, carefully read the Owner's Manual provided with each attachment.
- The lever should automatically return to Neutral when you release it from Reverse. If it doesn't, then you should push it down into Neutral. Then refer to Section 6 for repair instructions.
- There should not be any Reverse motion if the lever is not held up in Reverse. If there is, the machine is badly out of adjustment and it should not be used until the condition is corrected. See Section 6 for repair instructions.



3/5—With tines off the ground lift and hold lever UP for Reverse.



3/6—Let go of lever to stop Reverse motion.



## Wheel Speed Shift Lever

This lever, located to the right of the operator's position, lets you choose between two different engine powered wheel ground speeds: SLOW or FAST.

It also has a FREE WHEEL position, in which the wheels are free to turn without the engine running.

**NOTE:** By moving the Forward Drive Belt (discussed further on in this Section) into one of two different belt ranges, you can obtain a total of FOUR different Forward wheel speeds. However, there are only two wheel speeds for Reverse (Slow or Fast), because in Reverse the wheels are driven by the rubber Reverse Disc, not the Drive Belt.

When you shift the lever all the way down or up, it moves a sliding clutch inside the transmission to the left or right to engage a Slow Speed or a Fast Speed wheel drive gear. No power is provided to the wheels in either Forward or Reverse unless the clutch and one of these wheel speed gears is engaged.

Please note that the Slow Speed and Fast Speed wheel drive gears (inside the transmission) are always turning whenever the Forward/Neutral/Reverse Lever is placed in either Forward or Reverse. Therefore, always make your wheel speed selection **BEFORE** you shift out of Neutral. This will avoid damage to the gears or clutch that could occur if you try to engage the clutch with one of the turning gears.

Also, do not use the Wheel Speed Shift Lever to try and stop the wheels from turning. When the wheels are turning, the gear and clutch are locked together, and it is very difficult to move the lever out of gear. Instead, always place the Forward/Neutral/Reverse Lever in NEUTRAL to stop wheel motion.

### To Operate the Wheel Speed Shift Lever:

With the engine off, practice shifting the lever as described next. Note that whenever you shift the lever, you must roll the tiller a few inches (in either direction) to help align the clutch with the selected wheel gear. When the lever goes into gear, you will no longer be able to roll the tiller.

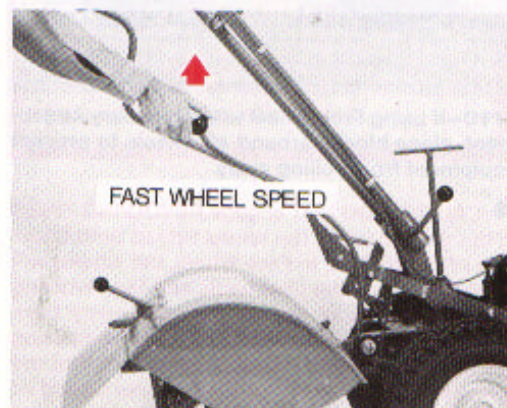
**FOR SLOW WHEEL SPEED:** With the Forward/Neutral/Reverse Lever in Neutral, roll the tiller a few inches while you push the Wheel Speed Shift Lever all the way DOWN (see Photo 3/7). If the lever is in gear, you will no longer be able to roll the tiller.

**FOR FAST WHEEL SPEED:** With the Forward/Neutral/Reverse Lever in Neutral, roll the tiller a few inches while you lift the lever all the way UP (see Photo 3/8). You will no longer be able to roll the tiller when the lever is in gear.

**FOR FREE WHEELING:** With the Forward/Neutral/Reverse Lever in Neutral, simply place the lever in-between the Slow and Fast wheel speed positions (see Photo 3/9). In the Free Wheel position the wheel gears are not engaged with the clutch and the wheels will turn freely when you roll the tiller.



3/7—Push Wheel Speed Shift Lever DOWN for Slow Wheel Speed.



3/8—Lift lever UP for Fast Wheel Speed.



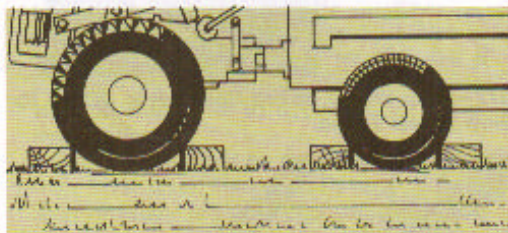
Note that there should not be any "clicking" noise when you're completely out of gear. If there is, just shift the lever a little more to eliminate the noise—and the rubbing of the clutch and gear that causes it.

The Free Wheel position allows you to roll the tiller about without the engine running; a handy feature when you are "parking" your machine, or when you want to move it more quickly than is possible when the wheels are being driven by the engine.

You would also use Free Wheel when using the engine on the Power Unit to drive a Stationary Attachment, in which case you would not want the wheels on the Power Unit or Attachment to move. For safety, always place blocks around the wheels of the Power Unit and the Stationary Attachment to prevent the equipment from rolling away (see Sketch 3/10).



3/9—Place lever in middle for Free Wheel.



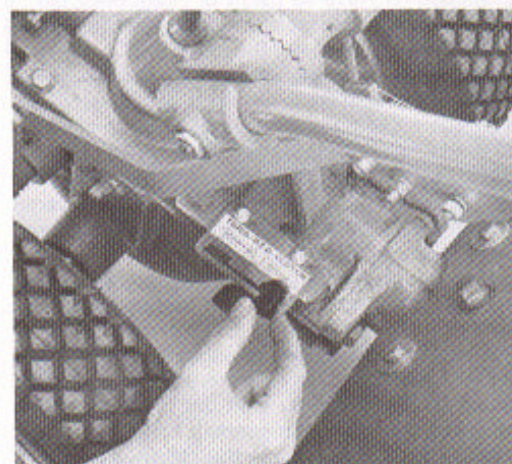
3/10—If using Free Wheel with Stationary Attachment, place blocks around all wheels to prevent equipment from rolling away.

● **CAUTION: DO NOT** engage REVOLVING TINES in the ground when the Wheel Speed Shift Lever is in FREE WHEEL. In Free Wheel, the wheels will not help to hold the tiller back, and the revolving tines could propel the tiller rapidly away from you—possibly causing loss of control. When using the tiller attachment, always make sure that the lever is engaged in either Slow Wheel Speed or Fast Wheel Speed before starting the engine or shifting into Forward or Reverse.

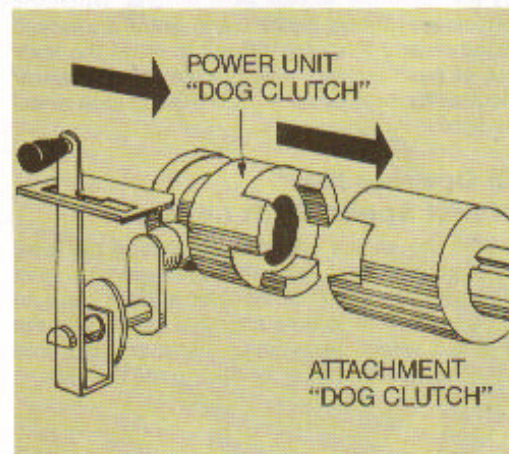
## Tines/PTO Clutch Lever

This lever is located on the left side of the machine, as shown in Photo 3/11. Power driven attachments such as the tines, the log splitter and the generator are engaged with this lever.

If the lever is moved backward to the Engaged position (Photo 3/11), the Tines/PTO "dog" clutch inside the Power Unit transmission also moves backward until it engages the "dog" clutch of the attachment—see Sketch 3/12. With the clutches engaged, power will be applied to the attachment whenever the Forward/Neutral/Reverse Lever is shifted into either Forward or Reverse.



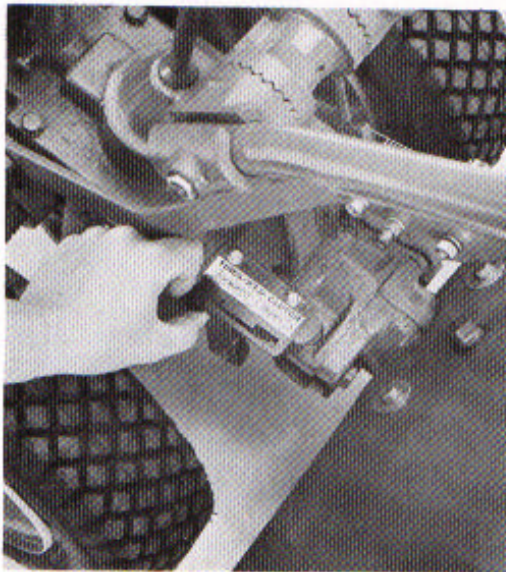
3/11—Tines/PTO Clutch Lever in Engaged position.



3/12—Drive shaft "dog" clutches are engaged and disengaged with Tines/PTO Clutch Lever.



If the lever is moved forward to the Disengaged position (Photo 3/13), the "dog" clutch also moves forward until it disengages the "dog" clutch on the attachment. With the clutches disengaged, power will not be applied to the attachment when the Forward/Neutral/Reverse lever is activated.



**3/13—Tines/PTO Clutch Lever in Disengaged position.**

**IMPORTANT:** Always place the Forward/Neutral/Reverse Lever in Neutral before engaging or disengaging any attachment. Doing so will prevent transmission damage that could occur if you try to engage or disengage the clutches while they are turning.

When using the tine attachment, the Disengaged position allows you to stop the tines from turning while the separately controlled tiller wheels continue to rotate—an important safety feature when moving the tiller to and from the garden, when loading or unloading it from a trailer or truck, when backing it up, or when turning it around. You should also disengage the PTO lever before transporting any attachment that, for safety reasons, should not be powered while it is being moved.

When the tines are removed and an attachment is installed that operates from a stationary position (such as a log splitter or a generator), the engaged position of the lever allows you to power the attachment while the wheels on the Power Unit are not moving.

### To Operate the Lever:

With the engine off, practice moving the lever into the Engaged and Disengaged positions, as described next.

#### To Engage Tines or Other PTO Driven Attachments:

1. Place Forward/Neutral/Reverse Lever in Neutral.
2. Pull PTO Lever out and slide it into the Engaged slot—see Photo 3/11.

**IMPORTANT:** After selecting the Engaged position, do not immediately shift the Forward/Neutral/Reverse Lever into Reverse. Always use Forward first (for at least a few moments) to help align the drive shaft couplings inside the transmissions.

#### To Disengage Tines or Other PTO Driven Attachments:

1. Place Forward/Neutral/Reverse Lever in Neutral.
2. Pull PTO Lever out and slide it into the Disengaged slot—see Photo 3/13.

**NOTE:** The lever should move back and forth easily. If it doesn't, then the "dog" clutch inside the Power Unit transmission may need to be lubricated. See Section 6 for lubrication instructions.

### SAFETY CAUTIONS

- Do not attempt to stop tines or attachments by Disengaging the Tines/PTO Lever. Always place the Forward/Neutral/Reverse Lever in Neutral to stop attachments.
- Disengage tines before transporting, loading or unloading, reversing, or turning tiller around.
- Carefully read the Owner's Manual provided with any powered attachment before attempting to use attachment.



## Tiller Depth Regulator Lever

This lever, located at the rear of the tiller hood cover, controls the depth to which the tines penetrate the soil.

It also has a "travel" setting, which places the tines completely above the ground.

When you pull back on the lever, notches in the adjustment bar clear a pin and allow it to be moved up or down into any of eight positions, from the travel setting to full tilling depth of 8" or more—see Sketch 3/14.

**IMPORTANT:** When starting the engine, the Depth Regulator Lever should be placed in the Travel position so that the tines are clear of the ground—for safety.

One of the secrets of successful tilling is in using the Depth Regulator Lever properly. It's usually impossible to get 4" or 5" deep on the first pass through untilled soil. So, start with a shallow cut and gradually increase the tilling depth by raising the lever to the remaining notches. If the tiller bounces or jumps in hard spots, then use a shallower setting until the soil is more thoroughly broken up. You'll find more detailed information about using the Depth Regulator Lever in Section 5.

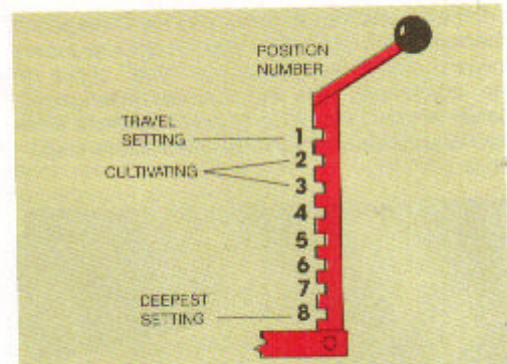
### To Operate the Depth Regulator Lever:

With the engine off, practice moving the lever into the various positions described next. When actually tilling, you can adjust the lever even while the tiller is moving.

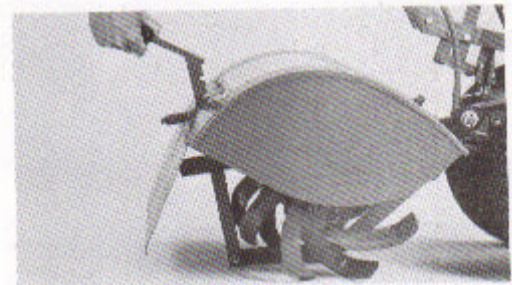
**FOR SHALLOW TILLING:** Pull the lever back and then push it down until it engages the second or third notch from the top—see Photo 3/15.

**FOR DEEPER TILLING:** Pull the lever back and then up to any of the deeper settings (notches four through eight)—see Photo 3/16.

**FOR TRAVEL SETTING:** Pull the lever back and then push it all the way down until it engages the top notch—see Photo 3/17. This position is ideal when you are driving the tiller over lawns or driveways and you don't want the tines—which should be Disengaged—to scrape the ground.



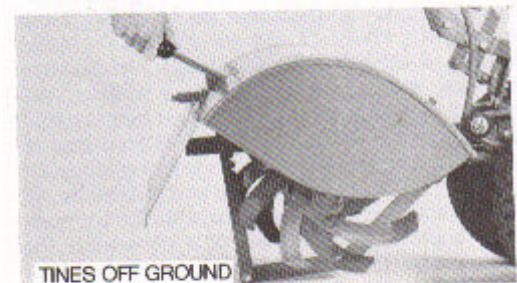
3/14—Notches in bar control tilling depths.



3/15—Lower lever for shallow tilling and cultivating.



3/16—Raise lever for deeper tilling depths.



3/17—Use travel setting to clear tines of ground.



## Instant Handlebar Adjustments

The Handlebars can be adjusted Up, Down, and Sideways, without tools.

As a general rule, the handlebars should be at approximately waist level when the tines are 3" to 4" in the soil. However, you should, of course, adjust the height to whatever position you are most comfortable with.

As shown in Photo 3/18, height adjustments are easily accomplished by using the Height Adjustment Stud.

For special situations, your handlebars can also be adjusted to the left or right side of the tiller by using the T-Bar Adjustment—see Photo 3/19.

Positioning the handlebars off to one side usually isn't necessary because you can normally walk on either side of the tiller and control its movement with just one hand. However, if you are working up close to fences, fruit trees, or thorny bushes, and two hands are needed to control the tiller, then moving the handlebars to one side could be beneficial to you.

### TO ADJUST THE HANDLEBARS UP OR DOWN:

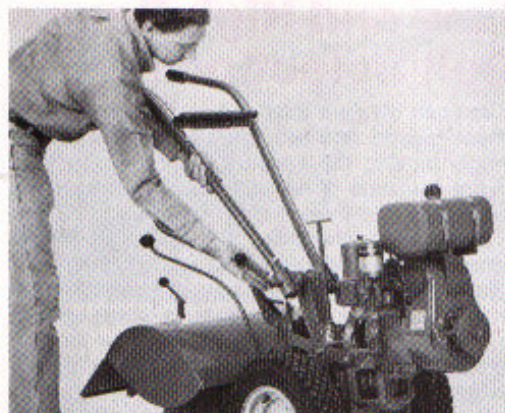
Simply wind out the Adjustment Stud enough so that the teeth in the Ratchets are disengaged. Then, move the handlebars up or down as needed—see Photo 3/18.

### TO ADJUST THE HANDLEBARS FROM SIDE TO SIDE:

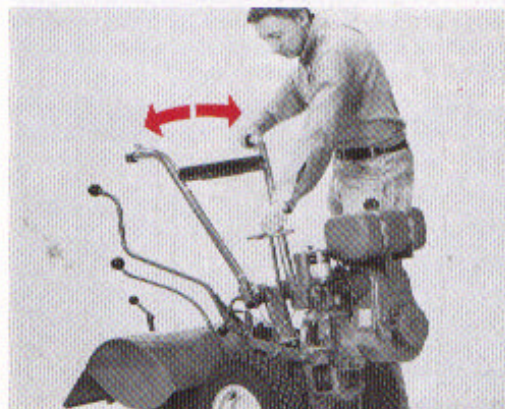
Loosen the T-Bar Adjustment until the Handlebar Base can rotate from side to side—see Photo 3/19. Be careful not to overstretch the throttle cable when going to the left side of the tiller.

● **CAUTION:** Never operate your tiller on the side of a hill or slope if the handlebars are swung out to one side.

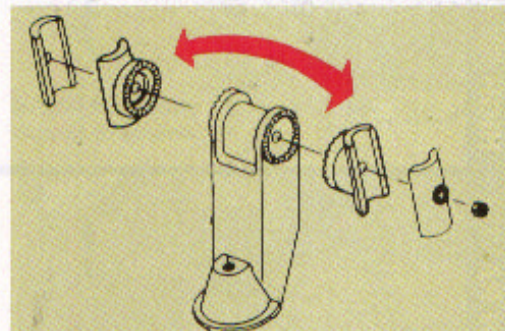
● **CAUTION:** Do not lower the handlebars so low as to interfere with the proper operation of the Forward/Neutral/Reverse Lever.



3/18—Loosen adjustment stud to raise handlebars up or down.



3/19—Loosen T-Bar to move handlebars from side to side.



3/20—If you have difficulty finding that "just right" height position, in-between positions can be obtained by switching the inside ratchets, as shown above. This will change the handlebar height a few inches higher or lower than normal.



### Manual Choke (6 HP)

The manual choke on your 6 HP engine is located on the carburetor, directly below the front portion of the air cleaner cover (Photo 4/12). If you look closely, you'll notice the word **CHOKE** printed on the arrow-shaped tip of the lever.

When the choke is pushed all the way in (toward the engine) to **FULL CHOKE**, it cuts off most of the air supply to the carburetor to provide the rich fuel mixture required for starting the engine—see Photo 4/12. You should set the choke at this **FULL CHOKE** position when starting a cold engine.

Once the engine has started, move the choke to the **HALF CHOKE** position (Photo 4/13). Leave the choke in this position until the engine is warm (depending on outside temperatures, the warm-up time may vary between 45 seconds to as long as three minutes). When the engine is warm, return the choke all the way to the right, to the **NO CHOKE** position (Photo 4/14).

When restarting an already warm engine, you will probably not have to use the choke at all. However, if the engine falters when starting, then try setting the choke at **HALF CHOKE** until the engine runs smoothly, and then return it to the **NO CHOKE** position.

Please make sure that you don't operate the engine under a load without first seeing to it that the choke is in the **NO CHOKE** position. Failure to do so can quickly build up deposits that are harmful to your engine.



4/12—Choke in **FULL CHOKE** position.



4/13—Choke in **HALF CHOKE** position.



4/14—Choke in **NO CHOKE** position.

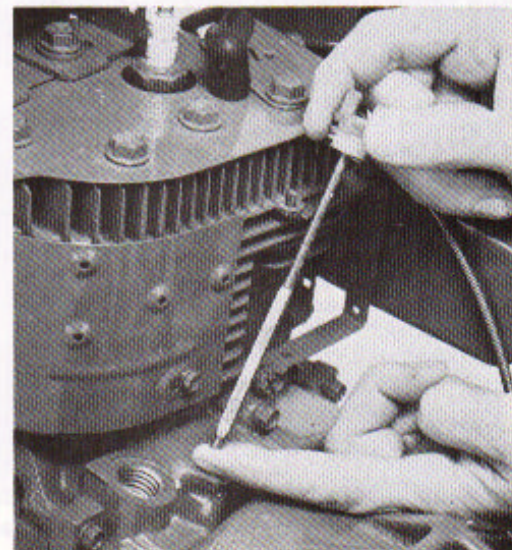
### Engine Oil (6 HP)

Be sure to check the engine oil level prior to each day's operation (and after every five operating hours) by measuring it with the dipstick (Photo 4/15). Doing so can prevent a ruined engine due to a lack of sufficient oil.

The oil level must always be maintained up to the "Full" mark. See Section 1 for instructions on how to check and add oil.

Always make sure you use oil of the proper grade and viscosity. SF or SE must be printed on the top of the can, or on the label. Straight 40 weight oil should be used in temperatures above 32°F. For colder temperatures, please see the oil recommendations in Section 6 of this manual.

With a new engine, change the oil after the first 2 operating hours. Thereafter, change the oil after every 10 operating hours. If operating in extremely dusty, dirty or dry conditions, change the oil more often—even every 5 hours should not be considered excessive. See Section 6 for oil changing instructions.



4/15—Check oil level before each use—6 HP.



## Starting the 6 Hp Tecumseh Engine

**CAUTION:** Do not run engine in an enclosed or poorly vented area. Exhaust gases contain carbon monoxide, an odorless and deadly poison!

If you have followed all of the instructions up to here, then you're ready to start the engine for the first time.

First make sure that you have gasoline in the fuel tank and that the spark plug wire is attached to the spark plug. Also, remember to always check the oil level prior to each day's operation.

**NOTE:** At this time, practice starting and stopping the ENGINE ONLY. Please don't try to drive the tiller until you see the step-by-step operating instructions in Section 5 of this manual.

1. Place the Forward/Neutral/Reverse Lever in NEUTRAL.
2. Engage the wheels by pushing the Wheel Speed Shift Lever DOWN for Slow Wheel Speed. Roll tiller back and forth a few inches to fully engage lever.
3. Move the Depth Regulator Lever all the way DOWN, so that the tines are clear of the ground.
4. Move the Throttle Lever to the left, to a Slow Running setting (Photo 4/21).
5. Set the choke lever at FULL CHOKE (for a cold engine). See Photo 4/22.
6. **RECOIL START MODEL**—Grasp the starter rope handle and slowly pull the cord until you feel

resistance (Photo 4/23). Then pull the cord out rapidly, . . . but let it back in slowly. You may have to try this several times until the engine catches. (Be sure there is nothing behind you when you pull the cord.)

**ELECTRIC START MODEL**—Insert your key all the way in the slot and turn it to START (Photo 4/24). Hold it at Start for no more than 10 seconds. You may have to try this several times before the engine catches. (Allow the engine to come to a complete halt before each restart attempt.) When the engine starts, release the key. . . it will automatically return to RUN. (You can also start the electric model with the recoil start rope, but only after you follow the steps described in "In Case Of A Dead Battery" in Section 7).

7. When the engine fires and is running, keep the throttle lever at a slow position and move the choke lever to HALF CHOKE. Then, as the engine warms, move the choke to CHOKE OFF. (After the engine has been operating for ten minutes or more, it probably won't be necessary to choke the engine to restart it.)

● If the engine falters while warming up, move choke to HALF CHOKE until engine runs smoothly and then to NO CHOKE.

● If engine fires, but fails to start, move choke to NO CHOKE and repeat instructions 4 and 6 until engine starts. If engine again fires, but fails to start, repeat instructions 4, 5 and 6 until engine starts.



4/21—Position lever slightly less than half way between shut-off and full speed—6 HP.



4/22—FULL CHOKE position—6 HP.



## Stopping the 6 HP Engine

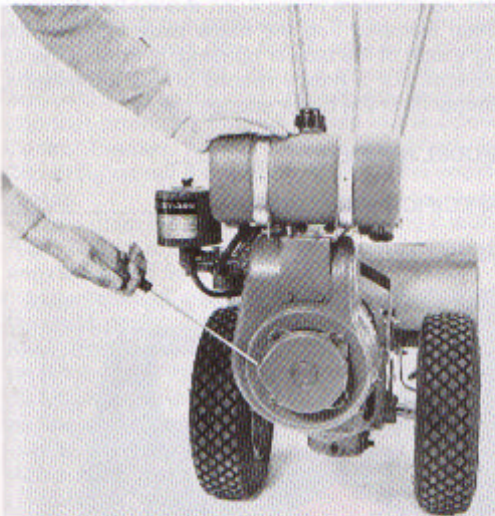
1. To stop wheels, tines or attachments any-time, place the Forward/Neutral/Reverse Lever in NEUTRAL.

2. **RECOIL START MODEL**—Push the Throttle Lever all the way to the right (Photo 4/25). If your engine doesn't shut off automatically, push the choke lever in toward the engine to FULL CHOKE to stop the engine. Then see "Throttle Cable Hook-up and Adjustments" in Section 7 to correct the problem. **IMPORTANT: Only stop the engine with the choke in emergencies, since repeated use of it can be harmful to your engine.**

3. **ELECTRIC START MODEL**—You can shut off the engine two ways: with the throttle lever or with the key switch.

a. Push the Throttle Lever all the way to the right, as explained in Step 2, above. Then turn the key to OFF.

b. Or, turn the key to OFF. (Remove the key for safekeeping. We suggest you keep it in an easily found place, but secure from children, who shouldn't be allowed to use the engine). If the key switch won't stop the engine when you turn it to "OFF", please see "Electric Start Troubleshooting" in Section 7.



4/23—Pull cord out rapidly . . . let it rewind slowly—6 HP.



4/24—Turn key to START position.



4/25—Move lever to right to stop 6 HP engine.

**PLEASE SEE SECTION 5 OF THIS MANUAL FOR COMPLETE DETAILS ON HOW TO OPERATE YOUR TROY-BILT HORSE MODEL!**



## Starting the 8 HP Briggs & Stratton Engine

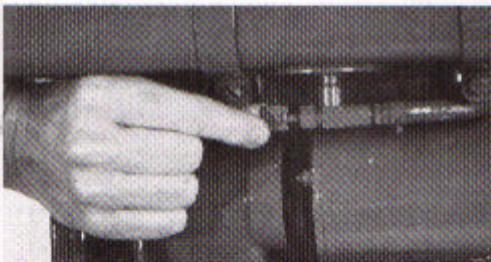
**CAUTION:** Do not run engine in an enclosed or poorly vented area. Exhaust gases contain carbon monoxide, an odorless and deadly poison!

If you have followed all of the instructions up to here, then you're ready to start the engine for the first time.

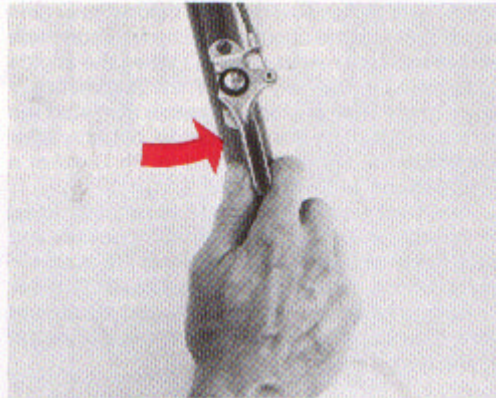
First, make sure that you have gasoline in the fuel tank and that the spark plug wire is attached to the spark plug. Also, remember to always check the oil level prior to each day's operation.

**NOTE:** At this time, practice starting and stopping the **ENGINE ONLY**. Please don't try to drive the tiller until you see the step-by-step operating instructions in Section 5 of this manual.

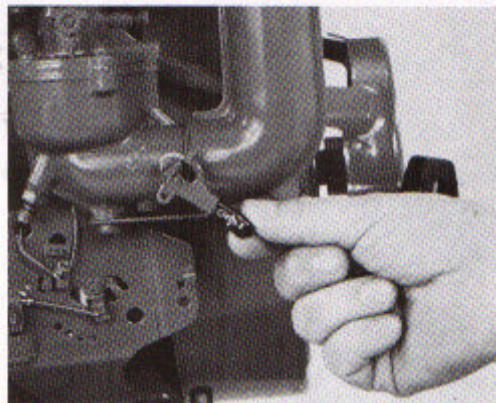
1. Place the Forward/Neutral/Reverse Lever in NEUTRAL.
2. Engage the wheels by pushing the Wheel Speed Shift Lever DOWN for Slow Wheel Speed. Roll tiller back and forth a few inches to fully engage lever.
3. Move the Depth Regulator Lever all the way DOWN, so that the tines are clear of the ground.
4. Open the fuel valve under the gas tank by turning it in a counterclockwise direction (Photo 4/60).
5. Open the throttle lever on the handlebar a short distance to the right from the stop position—see Photo 4/61.
6. Move the choke lever down to the Full Choke position (Photo 4/62).
7. **RECOIL START MODEL**—Grasp the starter rope handle and slowly pull the cord until you feel resistance (Photo 4/63). Then pull the cord out rapidly . . . but let it back in slowly. You may have to try this several times until the engine catches. (Be sure there is nothing behind you when you pull the cord.)



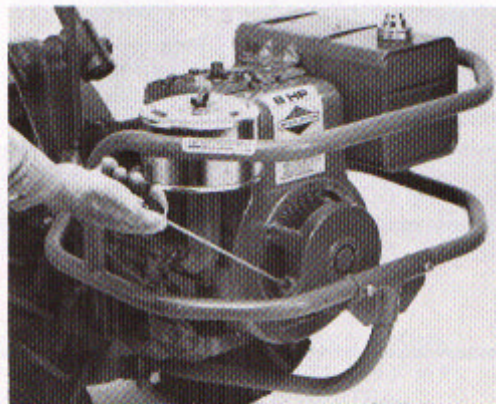
4/60—Open fuel valve—8 HP.



4/61—Move lever to right to start—8 HP.



4/62—Full choke position—8 HP.



4/63—Pull recoil rope to start—8HP.



**ELECTRIC START MODEL**—Insert your key all the way in the slot and turn it to START (Photo 4/64). Hold it at Start for no more than 10 seconds. You may have to try this several times before the engine catches. (Allow the engine to come to a complete halt before each restart attempt.) When the engine starts, release the key . . . it will automatically return to the RUN position. (You can also start the electric model with the recoil rope, but only after you follow the steps described in "In Case of a Dead Battery" in Section 7.)

**8.** When the engine starts and is running, keep the throttle lever at a slow running position and move the choke lever to Half Choke. Then, as the engine warms, move the choke to Choke Off. (After the engine has been operating for ten minutes or more, it probably won't be necessary to choke the engine to restart it).



4/64—Turn key to Start position—8 HP.

## Stopping the 8 HP Engine

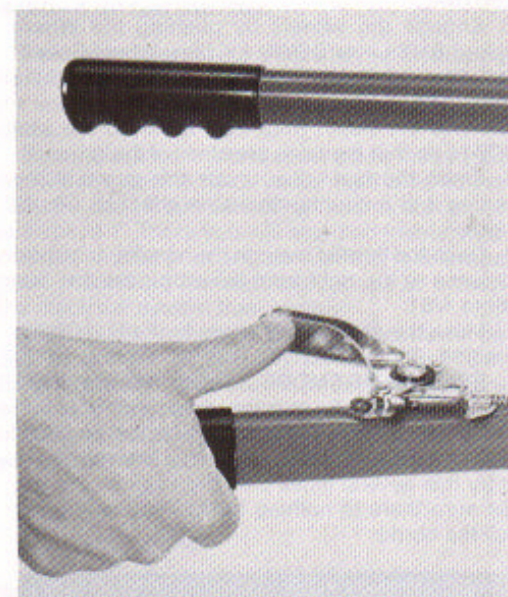
**1.** To stop wheels, tines, or attachments any-time, place the Forward/Neutral/Reverse Lever in NEUTRAL.

**2. RECOIL START MODEL**—Push the Throttle Lever all the way to the Left (Photo 4/65). If the engine doesn't shut off automatically, push the choke lever down to Full Choke to stop the engine. Then see "Throttle Cable Hookup and Adjustments" in Section 7 to correct the problem. **Important:** Only stop the engine with the choke in emergencies, since repeated use of it can be harmful to your engine.

**ELECTRIC START MODEL**—You can shut off the engine two ways, with the throttle lever or with the key switch.

**a.** Push the Throttle Lever all the way to the Left, as explained in Step 2, above. Then turn the key to OFF.

**b.** Or, turn the key to OFF. (Remove the key for safe-keeping. We suggest you keep the key in an easily found place, but secure from children, who shouldn't be allowed to use the engine.) If the key switch won't stop the engine when you turn it to "OFF", please see "Electric Start Troubleshooting" in Section 7.



4/65—Push left to stop engine—8 HP.

**PLEASE SEE SECTION 5 OF THIS MANUAL FOR COMPLETE DETAILS ON HOW TO  
OPERATE YOUR TROY-BILT HORSE MODEL!**



## SECTION 5: OPERATION OF TILLER

If you have read and understand all of the instructions in Sections 1, 2, 3 and 4, then you're ready to operate your Horse Model for the first time.

Before you do, please carefully read the pages in this Section. They're loaded with helpful and valuable information and directions concerning the operation of your machine . . . and about gardening the so-much-better Troy-Bilt Tiller way.

When first operating your new tiller, it's a good idea to practice without the tines doing any digging. Find an open, clear section of ground and practice moving the controls and running the tiller back and forth for a few minutes.

Do this at slow wheel and belt speeds, with the Depth Regulator set in the "travel" position. Only when you feel completely confident with the tiller should you start using it in the garden.

Before trying to operate your tiller the first time, make sure that you have:

1. Read the Safety Precautions in Section 2 of this manual and in the engine manufacturer's Owner's Guide.
2. Studied photographs locating tiller controls and compared the photos with the actual controls on your tiller. See Section 3.
3. Worked the tiller controls without the engine running and understand what each does.
4. Familiarized yourself with all of the engine controls. See Section 4.



5

### CAUTION

Keep hands, feet, legs and clothes away from revolving tines. Tines revolve when engine is on and Forward/Neutral/Reverse Lever and Tines/P.T.O. Clutch Lever are engaged. TO STOP TINES: Put Forward/Neutral/Reverse Lever in NEUTRAL.



## Operating Instructions

The instructions printed on your Handlebar Control Panel and the Tiller Hood Cover are a summary of the steps to follow to operate your tiller. Be sure to also read the "Turning Around" instructions in this Section before running your machine.

**CAUTION:** Read each Owner's Manual provided with any optional accessories or attachments before operating engine. The manuals provide a detailed description of proper use and operation, and point out other important Rules for Safe Operation.

### Pre-Start Inspection

Always perform the following checks and services before starting the engine:

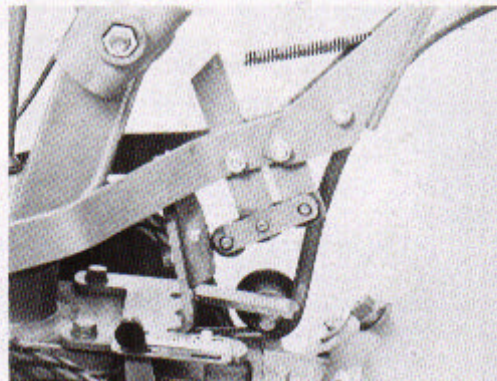
1. Check the oil level in the engine crankcase.
2. Inspect the air filter for cleanliness.
3. Fill the fuel tank with clean, fresh gasoline.
4. Be sure the spark plug wire is securely attached to the spark plug.

### To Start

1. Put the Forward/Neutral/Reverse Lever in NEUTRAL. (Always return to Neutral before shifting the Wheel Speed Shift Lever or before Engaging or Disengaging the Tines/P.T.O. Clutch Lever.) See Photo 5/1.
2. Put the Wheel Speed Shift Lever in either the Slow or Fast wheel speed position, if using tines or any other moving attachment. See Photo 5/2. (Roll unit back and forth a few inches while shifting, to fully engage Slow or Fast wheel gears.) NOTE: If using Stationary Attachments, put lever in Free Wheel position and place blocks around all wheels to prevent equipment from rolling away.

**CAUTION:** Do not put revolving tines in soil if Wheel Speed Shift Lever is in FREE WHEEL. In Free Wheel, the wheels will not perform their function of holding the tiller back, and if the tines are in the soil, they will propel the tiller very rapidly. Always put the Wheel Speed Shift Lever in either the Slow or Fast wheel speed position before engaging the tines in the soil.

3. Move the Depth Regulator Lever all the way Down so that the tines are off the ground—see Photo 5/3. This places the tines in the "travel" position.



5/1—Place Forward/Neutral/Reverse Lever in NEUTRAL.



5/2—Select wheel drive position (Slow gear shown).



5/3—Set tines in travel position.



4. Select either the Engaged or Disengaged position of the Tines/PTO Clutch Lever—Photo 5/4. (Use the Engaged position if you want the tines to turn, or if you want to apply power to a stationary attachment.) IMPORTANT: After engaging tines or other attachment, always use Forward drive (explained in Step 6 below) before using Reverse. The use of Forward will help to fully engage the PTO clutch.

5. Start the engine (see Section 4). Allow engine to warm up before increasing engine speed.

NOTE: While practicing, you should not lower the tines with the Depth Regulator Lever until you are prepared to dig up the soil. (Do your practice with the tines in the "travel" position.) In actual use, you would now set the tines to the desired digging depth and increase the engine speed.

6. For FORWARD Motion of Wheels and Tines (or to Apply Power to a Stationary Attachment): Push the Forward/Neutral/Reverse Lever Down and Let Go—see Photo 5/5.

To STOP Forward Motion of Wheels and Tines (or to Stop Power to a Stationary Attachment): Tap or lift the Forward/Neutral/Reverse Lever Up and Let Go. With the lever in Neutral, all machine motion will stop.

7. For REVERSE Motion: Lift and hold Forward/Neutral/Reverse Lever Up—see Photo 5/6. Before using Reverse with tine attachment: (A) Shift lever into Neutral; (B) Reduce engine throttle speed; (C) Disengage tines; (D) Raise handlebars to clear tines from ground.

To STOP Reverse Motion: Let go of the lever.

#### SAFETY CAUTIONS

- Before reversing, make sure there are no obstacles behind you.
- To use Reverse with attachments other than the tines, read the Owner's Manual provided with each attachment.
- Avoid prolonged use of Reverse with any attachment.

#### To Stop

1. To STOP wheels, tines, or other attachments, put Forward/Neutral/Reverse Lever in NEUTRAL.
2. To STOP engine, move throttle lever on Handlebar to Shutoff position (and turn key to "OFF" on electric start models). See Section 4.
3. Put Tines/PTO. Lever in Disengaged position when transporting or not in use.



5/4—Select engaged position for power to attachments.



5/5—Push lever down for Forward motion.



5/6—Hold lever up for Reverse motion.



## Turning Your Tiller Around

Turning around with your tiller isn't difficult at all. All you have to do is find the balance point between the weight of the engine up front and the weight of the tines in the rear, and then let the power driven wheels do the work as you simply guide the tiller around. Practice it a few times and you'll have it down pat.

**CAUTION:** To turn around with attachments other than the tines, read the Owner's Manual provided with each attachment.

1. When you come to the end of a row, reduce the engine speed by moving the throttle lever on the handlebars to a Slow setting. See Photo 5/7.
2. Lift the handlebars to raise the tines out of the ground and put the Forward/Neutral/Reverse Lever in NEUTRAL. See Photo 5/8.
3. For safety, move the Tines/P.T.O. Clutch Lever to the Disengaged position.
4. Lift the handlebars again, then push the Forward/ Neutral/Reverse Lever Down to go Forward.
5. With the tines out of the ground, PUSH the handlebars to swing the tiller around—see Photo 5/9. As you turn, the outside wheel will provide most of the traction while the inside wheel will just turn in one place.
6. When you complete the turn, return the Forward/Neutral/Reverse Lever to NEUTRAL.
7. When you are ready to go forward again, move the Tines/P.T.O. Lever to the Engaged position.
8. Push the Forward/Neutral/Reverse Lever Down to go Forward and to power the tines. See Photo 5/10.

**NOTE:** Use Reverse, if necessary, to turn in a limited space.



5/7—Slow engine down at end of row.



5/8—Lift handlebars and shift to NEUTRAL.



5/9—Lift and push handlebars to turn tiller.



5/10—To start new row, shift down to Forward.



## Transporting the Tiller

The power-driven wheels on your tiller allow you to easily move it to and from your garden site when the engine is running. Or, you can move the tiller (on level ground) without the engine running by using the Free Wheel position on the Wheel Speed Shift Lever.

### SAFETY CAUTIONS

- Always put Tines/PTO Lever in Disengaged position before transporting or loading/unloading tiller.
- To transport or load/unload machine with attachments other than the tines, read the Owner's Manual provided with each attachment.

### To Travel Under Engine Power

1. Move Tines/PTO Lever to Disengaged position.
2. Move Depth Regulator Lever down to top notch. This prevents tines from scraping ground.
3. Select Slow or Fast wheel drive position on Wheel Speed Shift Lever.
4. Shift Forward/Neutral/Reverse Lever into Forward or Reverse to start wheels moving.

### To Travel Without Engine Power

1. With engine stopped, follow Steps 1 and 2 of "To Travel Under Engine Power" instructions.
2. Select Free Wheel position on Wheel Speed Shift Lever. In Free Wheel, machine can be moved by pushing on handlebars.

### To Load or Unload Tiller

1. Use loading ramps that are wide and strong enough to support both machine and operator (machine weighs between 290-340 lbs.).
2. Move Tines/PTO Lever to Disengaged position.
3. Use Slow wheel speed and set engine throttle at idle.
4. To go up ramps, shift into Forward and follow tiller up ramps.
5. To go down ramps, shift into Reverse and back down. Never go down ramps in Forward as tiller



1. 5/11—Disengage tines before loading or unloading.

could tip forward, exposing you to the tines (which should be disengaged).

## Guiding Your Tiller

While tilling, relax and let the wheels pull the tiller along while the tines do the digging. Walk alongside the tiller on the side that is not yet finished (to avoid making footprints in the just tilled soil) and lightly, but securely, grip the handlebars with one hand—see Photo 5/12.

Please do not push down on the handlebars in an attempt to force the tiller to dig deeper. Doing so takes the weight off of the wheels (reducing traction), and causes the tines to attempt to propel the tiller instead of just digging. Without the wheels helping to hold the tiller back, the tines can cause the tiller to hop and skip rapidly across the garden.

### CAUTION

Always be aware that the tiller may unexpectedly bounce upward or jump forward if the tines should strike extremely hard-packed soil, tough sod, unworked soil, frozen soil, or buried objects such as large stones, roots or stumps. When faced with extremely tough conditions such as these, or if you are in doubt about the tilling conditions, always use the following operating precautions to assist you in maintaining control of the tiller:

1. Walk behind and to one side of the tiller, using *just one hand*. A *secure grip but loose arm* will give you better control should the tiller bounce or jump.
2. Use *shallower* depth regulator settings, working down *gradually* deeper with each successive pass until the soil has been thoroughly loosened.
3. Use slower wheel, tine and engine speeds.
4. Clear the area to be tilled of large stones, roots, etc., as much as possible.
5. Avoid applying downward pressure on the handlebars. If necessary, apply *slight upward* pressure to prevent the tines from digging too deeply.
6. Remember to keep feet and legs away from the revolving tines.
7. Before contacting hard-packed soil at the end of a row, always slow down the engine speed and raise the tines out of the soil.
8. Do not "fight" the tiller if it should bounce or jump; *lightly resist* the movement and let the tiller settle back down.
9. In an emergency, the wheels and tines can be stopped quickly by shifting the Forward/Neutral/Reverse Lever into Neutral.



## Tilling Depths

When you start to till in the garden, remember to take it easy. Don't try to take too deep a cut in the first pass through sod or hard ground that has not been tilled for several months or years.

It's almost impossible to get down four or five inches on the first pass through untilled soil. In very hard, dry soil, you should start tilling at a very shallow depth regulator setting, only an inch or two deep the first time. In each succeeding pass, you can go down a few more inches, gradually working down to the depth you want (watering your garden a few days prior to tilling will make the going much easier.) At any time, if you have difficulty getting down really deep, let the newly worked soil set for a day or two. When you return to it, the tilling will be easier.

In most soils, it's best to start out at the third or fourth notch of the depth regulator to break through the upper inch or two of soil. The fastest method is to till as deep as you can without making the tiller jump when it hits rocks, etc., but you should wait until you are very familiar with the tiller's operation before you use that procedure.

It is best not to work the soil when it is too soggy or wet. Doing so will make too many clumps that won't break up very easily. If time will permit, always wait a day or so after heavy rains for the ground to dry.

However, if you have low, wet sections in your garden, you can often speed up the drying time by just breaking up the top layer of soil the first time through. Then go over it again after a couple days. Wait and repeat the process again a few days later. Once the soil is dry enough to work at maximum depth, you can prepare your final seed-bed.

When you are cultivating your garden, the tines should be adjusted to till to a depth of just 1½ to 2 inches so they won't injure your plants' roots, which grow close to the surface.



5/12—Use one hand to guide tiller.

## Avoid Making Footprints

When making final tilling or cultivating passes, always try to walk alongside the tiller on the side that is not yet finished. If the ground has been well prepared, you can easily walk alongside guiding your tiller with one hand.

Eliminating footprints contributes much more than just good appearance to your garden. It aids in preventing soil erosion and avoids "planting" unwanted weed seeds right back in your newly tilled ground. It also leaves your soil nice and loose, so that vegetable roots can penetrate it easily.



5/13—Try to avoid leaving footprints.

## Traction

Some owners may have a problem with traction in wet clay soil, tall or heavy vegetation, or with extremely loose, light sandy soil (where spinning wheels may tend to get buried). Then too, a combination of soil and slope conditions can sometimes cause traction problems.

In these situations, Bar Tread Tires (Photo 5/14) or Troy-Bilt Chains (Photo 5/15) should provide the solution. For more details regarding these two items, please refer to the "Options and Attachments" information in this section. NOTE: If you use the Dozer/Snow Blade, we recommend the use of tire chains or Bar Tread Tires for better and safer traction.



5/14—Bar Tread Tires can make the difference in loose soil.



5/15—Chains add traction in tall vegetation.



## Clearing Debris From Tines

Your Bolo Tines feature a self-cleaning action which just about eliminates most tangling in the tines. But occasionally, dried-out grass, stringy stalks, or tough vines may get wrapped around the tines. It isn't necessary to remove all the residue, but don't let it build up to a point where it chokes off the action of the tines.

If you're extremely careful, you can try running the tiller in Reverse for a short distance while the tines are in the Engaged position (see "Reverse Cautions" in Sections 2 and 3 before reversing). Often the tines will clear themselves when you go Forward again.

If reversing the tiller doesn't work, then you will have to remove the tangled material by hand. A small pocket knife or linoleum knife will help you to cut away the material.

**CAUTION:** Stop the engine, Disengage the tines, and Disconnect the spark plug wire before trying to clean the tines by hand.

Normally, you can avoid most tangling problems by setting the Depth Regulator deep enough to get maximum "chopping" action as the tines chop the material against the ground, and by tilling under crop residues or cover crops while they are still green, moist and tender.

Also, you might try swaying the handlebars from side to side (about 6" to 12") while continuing to power compost. This fishtailing action often clears the residue out of the tines.

## How to Match Wheel and Tine Speeds to Particular Jobs

Your four-speed Horse Model Tiller offers a speed for every tilling task and situation in the garden, while you get maximum tilling results for each task.

In general, many folks will find that placing the forward drive belt in the High Range position and putting the Wheel Speed Shift Lever in Slow Wheel Speed will perform most tilling chores very well, except those under very hard and tough conditions. For example, if you try to work too fast in tilling tough sod or previously unworked land, you won't get the job done adequately. So, you'll have to throttle back the engine speed a little. If you find that in doing so, you aren't getting enough engine power, then moving the belt back to Low Range and tilling in Slow Gear will provide you with more power at the slower speed you want.

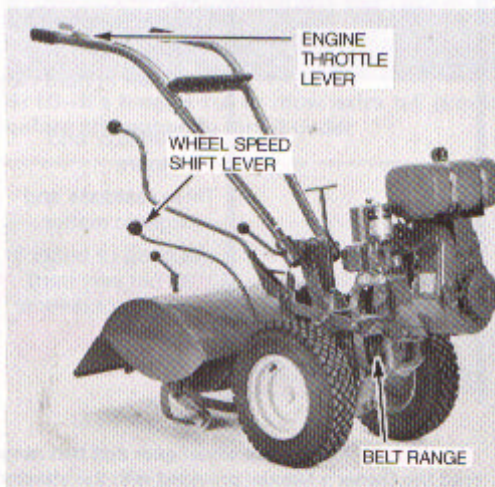
On the other hand, High Belt Range and Fast Wheel Speed offer some people the perfect combination of wheel and tine speeds to prepare seedbeds in well-tilled soil and cultivate at speeds fast enough to get the job done quickly—at a lower engine throttle setting. These faster wheel and tine speeds not only save wear and tear on your engine, they also permit you to dig shallower, without as much lifting up of the handlebars.

With a little experimenting, you will soon be able to find the proper tilling depth, engine throttle setting, and wheel and tine speeds that are just right for the piece of soil you are working on (see Photo 5/16). What this means is:

1. You advance the throttle lever on the handlebars to keep the engine running at a sufficient power level to do the job.
2. You have the depth regulator set in a notch which is not so deep that it causes the engine to labor or causes the tiller to jump.
3. You have the tines turning over fast enough to really break up the soil with a minimum number of passes.

When your tiller is working properly, you can hear that the engine is not laboring very hard and see that the tines are breaking up the soil into small, thoroughly tilled bits. At the proper match of wheel and tine speeds, you will get the job done quickly, and achieve results which are better and more satisfying.

To help guide you in your selections of wheel and tine speeds, please refer to the chart that follows. As you can see, there are many tasks and speeds that permit you to tailor your tiller's action to your needs.



5/16—Throttle and belt/pulley range determine tine speeds.